

33082M0231

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Makoto OKABE, et al.

Serial No.: To Be Assigned

Art Unit : To Be Assigned

Filed: February 6, 2002

Examiner : To Be Assigned

For: VACUUM PROCESSING APPARATUS

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to or concurrent with calculation of the filing fees, please amend the above-identified application as follows.

IN THE SPECIFICATION:

Page 1, between the title and the heading "Background of the Invention" insert --The present application is a continuation of Serial No. 09/457,295, filed December 9, 1999, which prior application is incorporated herein by reference.- -

IN THE CLAIMS:

Please cancel claims 1-10 without prejudice.

Please add new claims 11-14 as set forth in the attached sheet entitled "NEW CLAIMS".

REMARKS

Entry and consideration of this Preliminary Amendment are respectfully requested prior to examination on the merits.

This Preliminary Amendment is being filed to include a cross-reference to parent U.S. Patent Application Serial No. 09/457,295 filed December 9, 1999. This occurs on page 1 of the specification. It also is filed to introduce new claims 11-14 for prosecution in this continuation.

Examination on the merits is awaited.

Respectfully submitted,

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February 6, 2002

NEW CLAIMS

11. A vacuum processing apparatus for applying a designated process on an object to be processed in a vacuum atmosphere, said apparatus comprising:

- a processing vessel for applying the designated process to the object introduced thereinto;
- a susceptor located in the processing vessel for mounting the object thereon;
- a toroidal shaped vacuum pump including a motor therein for sucking exhaust gas from the processing vessel to form a vacuum in the vessel, the toroidal shaped vacuum pump being arranged below the processing vessel and being coaxial with the susceptor, the toroidal shaped vacuum pump defining a column-shaped space that is surrounded by the vacuum pump and that is located below the susceptor; and
- a driving mechanism arranged below the susceptor for moving the susceptor up and down, at least a part of the driving mechanism being received within the column-shaped space surrounded by the toroidal vacuum pump.

12. A vacuum processing apparatus for applying a designated process on an object to be processed in a vacuum atmosphere, said apparatus comprising:

- a processing vessel for applying the designated process to the object introduced thereinto;
- a susceptor located in the processing vessel for mounting the object thereon;
- a toroidal shaped vacuum pump for sucking exhaust gas from the processing vessel to form a vacuum in the vessel, the toroidal shaped vacuum pump being arranged below the processing vessel and being coaxial with the susceptor, the toroidal shaped vacuum pump defining a column-shaped space that is surrounded by the vacuum pump and that is located below the susceptor; and
- a driving mechanism arranged below the susceptor for moving the susceptor up and down, at least a part of the driving mechanism being received within the column-shaped space surrounded by the torodial vacuum pump.

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13. A vacuum processing apparatus for applying a designated process on an object to be processed in a vacuum atmosphere, said apparatus comprising:

- a processing vessel for applying the designated process to the object introduced thereinto;
- a susceptor located in the processing vessel for mounting the object thereon;
- an exhaust means for sucking exhaust gas from the processing vessel to form a vacuum in the vessel, the exhaust means being arranged below the processing vessel and being coaxial with the susceptor, the exhaust means defining a column-shaped space that is surrounded by the exhaust means and that is located below the susceptor; and
- a driving mechanism arranged below the susceptor for moving the susceptor up and down, at least a part of the driving mechanism being received within the column-shaped space surrounded by the exhaust means.

14. A vacuum processing apparatus for applying a designated process on an object to be processed in a vacuum atmosphere, comprising:

- a processing vessel for applying the designated process on the object introduced thereinto, the processing vessel being provided, therein, with a susceptor for mounting the object thereon;

a vacuum pump constructed cylindrically as a whole and arranged below the susceptor in the processing vessel so as to be coaxial with the processing vessel, for sucking exhaust gas in the processing vessel thereby to form a vacuum, the vacuum pump including:

- a cylindrical inner housing arranged coaxially with the processing vessel,
- a cylindrical motor stator arranged outside the cylindrical inner housing,
- a number of rotors rotatably arranged with respect to the cylindrical motor stator,
- a cylindrical inner housing arranged outside the rotors, and
- a number of stators fixed to the cylindrical outer housing so as to each extend between the adjacent rotors; and
- a driving mechanism arranged below the susceptor, for moving it up and down, wherein the vacuum pump is arranged around at least a portion of the driving mechanism coaxially therewith.